

**UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of

Fairchild Dornier GmbH

for an exemption from § 25.562(b)(2) of
Title 14, Code of Federal Regulations

**Regulatory Docket No.
FAA-2000-8580**

GRANT OF EXEMPTION

By letter dated December 22, 2000, J. Altmann, Airworthiness Office, Fairchild Dornier GmbH, P.O. Box 11 03, 82230 Wessling Germany, petitioned for exemption from § 25.562(b)(2) of Title 14, Code of Federal Regulations (14 CFR), as amended by Amendment 25-64. The proposed exemption, if granted, would permit relief from the floor warpage testing requirement of § 25.562(b)(2) for flight deck crew seats on the 728-100 airplane.

The petitioner requests relief from the following regulation:

Section 25.562(b)(2), as amended by Amendment 25-64, requires the floor tracks used to attach the seat to the floor to be misaligned with respect to the adjacent seat tracks by at least 10 degrees vertically (that is, out of parallel), with one rolled 10 degrees. The misalignment is used during the forward loading dynamic test condition and applies to both crew and passenger seats.

The petitioner's supportive information is as follows:

“The 728-100 airplane is a newly developed aircraft for which an application for JAA Type Certification has been forwarded to JAA on May 08, 1998. The JAA Certification Basis is based upon JAR 25 with Change 14 including Amendment 96/1. At the same time an

application for FAA Type Certification has been filed. The FAA Certification Basis is based upon FAR PART 25 including Amendments 25-1 through 25-96.”

“The basic aircraft shall be certified for the following operational conditions:

Flight in known icing conditions
IFR Flights with CAT II approaches
Day and Night operation

“The 728-100 will be a passenger transport airliner, corporate shuttle and executive transport aircraft. The aircraft shall be equipped with two turbofan engines, to be mounted under the wing leading edges.

“The flight deck is designed to accommodate two pilots and one flight observer. The standard cabin configuration shall provide seating for 70 Passengers, seated 5 abreast and two flight attendants. Two under floor baggage compartments shall be provided one forward and one aft of the wing.

“Each pilot seat shall be mounted on two linear tracks attached to the cockpit floor structure, which is part of the primary aircraft structure. In order to achieve an optimum combination of outside visibility and instrument scan the pilot’s seats shall be equipped with longitudinal and vertical adjustments. Seat adjustment shall be carried out manually. Each pilot seat has folding adjustable armrests, a reclining backrest with lumbar adjustment, and a dual inertia-reel 5-point safety shoulder harness system. The main structural parts of the pilot seats are made of milled high tensile aluminum.

“Amendment 25-64 introduced new seat standards to provide an improved occupant protection during emergency landing conditions: ‘Because of the improved standards, some lives are expected to be saved that otherwise may not have been.’

“These new standards were introduced based on the results of crash investigations. In the preamble to Amendment 25-64 it is stated: ‘Crash investigations have shown that localized cabin floor deformation can occur in survivable crashes.’ As a result of these investigations, new test dynamic requirement with simulated floor deformation has been introduced (FAR 25.562(b)(2)). This requirement makes no distinction between passenger, flight attendant and flight deck seats, while the FAA study mentioned in the preamble is based on passenger seats only: ‘...a comprehensive data base was developed on passenger seat/restraint system performance in survivable transport category airplane accidents.’

“The seats designed to meet floor warpage requirement cost more to manufacture, to test and, therefore, to purchase.

“There will be also an increase of the aircraft operating costs due to a weight increase.”

“In order to justify these increased costs there must [be] a commensurate increase in safety. This does not appear to be the case for the flight deck seats.

“Also, it should be noted that the precedence already exists as an exemption. The FAA has granted the same exemption providing the following supportive information:

‘Although some cockpit floor distortions have been observed after accidents, there has not been a problem with flight deck seat separations due to floor buckling on narrow body and larger airplanes which have been minimum of 40 inches of frangible structure between the flight deck floor and the lower fuselage contour. The FAA now considers that requiring testing of pilot seats with floor warpage cannot be justified on narrow body and larger airplanes. The FAA is currently developing a proposal to amend the regulations accordingly.’

“The 728-100 has 48 inches distance, which is more than the mentioned above 40 inches.

“In consideration of the foregoing, Fairchild Dornier GmbH petitions for exemption from floor warpage testing requirement of FAR 25.562(b)(2) at Amendment 25-96 for the flight crew seats.

Reasons why granting an exemption is in the public interest:

“The 728-100 is scheduled to begin the operation in 2003. The latest JAA/FAA airworthiness standards have been applied for this aircraft. During the course of the type investigation it has to be shown that each of these safety standards is met.

“Considering the fact that the 728-100 meets the later certification/safety standards, it is therefore in the interest of the travelling public that operation with the aircraft is possible at an early point in time.

“If efficient and economical operation of the 728-100 in the planned time frame is not possible, the customer airlines might be forced to acquire other airplanes which may provide a lesser standard of safety.

“Substitution of derivative airplanes certified to older regulation amendment levels would not be in the interest of public safety.

“Also, it should be noted that the renunciation of unjustified testing would result in cheaper ticket prices for the travelling public.

Reasons why granting an exemption will not adversely affect public safety:

“The 728-100 airplane is designed and will be certified to FAR 25 including Amendment 25-01 through Amendment 25-96, except as requested by this petition. This is a later certification basis than most or all competitive transport airplanes have in this class. The safety standards applied to the 728-100 meet or exceed those of other competitive airplanes currently operating and/or being produced and offered in the market.”

“According to the FAA position there has not been a problem with flight deck seat separations due to floor buckling on narrow body and larger airplanes which have been minimum of 40 inches of frangible structure between the flight deck floor and the lower fuselage contour. Since the 728-100 has 48 inches distance, which is more than the requested by FAA 40 inches, granting of this exemption will not adversely affect public safety.

Summary of Fairchild Dornier’s Petition:

“This petition seeks exemption from the floor warpage testing requirements of FAR PART 25, Subparagraph 25.562(b)(2) for the flight crew seats in determination of the certification basis for the 728-100 airplane. This subparagraph was amended by Amendment 64 to FAR PART 25 in May 1988, which introduced the upgraded seat standards to provide an improved occupant protection during emergency landing conditions.

“Demonstrating compliance with this requirement for this aircraft will not provide an increase in overall safety level commensurate with costs associated with testing.

“Accordingly, pursuant to the provisions of 14CFR, Part 11, Subchapter B Fairchild Dornier GmbH petitions for exemption from the requirements of FAR 25.562(b)(2) as amended by Amendment 25-64 for the 728-100 airplane flight crew seats.”

A summary of the petition was published in the Federal Register on February 21, 2001 (66 FR 11091). No comments were received.

The Federal Aviation Administration's analysis/summary is as follows:

The petitioner's request for relief from the requirement to misalign the seat tracks is limited to the Fairchild Dornier 728-100 flight deck seats. These seats are individually mounted, single seats with both vertical and horizontal adjustments to accommodate the differences in the size of crew members. Crew seats are required to be fairly rigid in order to withstand the pilot reaction forces from the flight controls. While it is conceivable that too much flexibility in the seat mounting structure could interfere with the safe operation of the airplane, some flexibility in the seat attachment is considered necessary to conform to likely floor distortions during crash conditions.

The FAA has reviewed the arguments presented by the petitioner in support of the exemption and concludes that the service history of flight deck seats on larger airplanes supports the petitioner's request. Although some cockpit floor distortions have been observed after accidents, there has not been a problem with flight deck seat separations due to floor buckling on narrow body and larger airplanes which have a minimum of 40 inches of frangible structure between the flight deck floor and the lower fuselage contour. Because the flight deck floor design is more rigid than the cabin floor, it is less prone to local deformations. This, coupled with a sufficient amount of crushable space below the floor, tends to obviate the need to demonstrate that the seat local attachment be distorted for test. The 728-100 exhibits both of these characteristics.

The FAA is considering a rule change that would permit testing of flight deck seats without considering floor distortion under certain conditions, as discussed above.

Considering the distortion characteristics of the flight deck floor, together with current rulemaking proceedings, the FAA considers it impractical to require an applicant to go to the extra certification expense of testing when there is no corresponding increase in safety.

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, Fairchild Dornier GmbH is hereby granted an exemption from 14 CFR 25.562(b)(2), pertaining to the floor warpage testing requirements for crew and passenger seats, to the extent necessary to permit type certification of the Model 728-100 airplane. The following limitations apply to this exemption:

1. This exemption is limited to the 728-100 family of airplanes and applies only to seats on the flight deck. Flight attendant or passenger seats are not exempted.
2. The flight deck seats are exempted from compliance with the 10 degrees of track misalignment required under § 25.562(b)(2). Compliance with all other requirements of § 25.562 is required.

Issued in Renton Washington, on June 4, 2001.

/s/ Ali Bahrami
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service